In cases in which the patient's condition will not permit the radical operation, drainage through the perineum is ordinarily the best.

We note on page 162 a singular blemish in so well prepared and scholarly a work, *fenestrum* for *fenestra*. L. A. S.

DIE MIKROORGANISMEN DER MUNDHÖHLE. DIE ÖRTLICHEN UND ALLGEMEINEN ERKRANKUNGEN, WELCHE DURCH DIESELBEN HERVORGERUFEN WERDEN. Von W. D. MILLER, Dr. med. et phil., Professor am zahnärztlichen Institute der Universität Berlin.

THE MICROÖRGANISMS OF THE MOUTH; THE LOCAL AND GENERAL DISEASES CAUSED BY THEM. By W. D. MILLER, M.D., Ph.D., Professor at the Dental Institute of the Universiy of Berlin. 8vo., pp. xx., 305; 112 illustrations and 1 colored plate. Leipzig: Georg Thieme, 1889.

THE need has long been felt of a work presenting clearly our knowledge of the microörganisms of the mouth, and of their relations to diseases of the general system as well as to those of the oral cavity itself. Up to the present time the literature of the subject has been scattered through numerous periodicals in several languages. In the book before us Dr. Miller has collected the authenticated facts in this department of mycology, so many of which he himself contributed. But his book is far from being a mere compilation, for in it are to be found many new observations by its author, making it of unusual interest.

Being intended as much for the use of the dentist as for that of the physician, it has seemed wise to present at the beginning a short summary of our knowledge of the properties of microörganisms in general, and especially of their relationship to fermentation and disease. The mouth is then shown to afford all the conditions necessary for their growth. It is accordingly not to be wondered at that certain species should be almost constant inhabitants of it; indeed, a number of these have thus far shown themselves to be incapable of growth outside their usual abode. Beside the twenty-two varieties described by the author in the *Independent Practitioner*, in 1885, thirty new species have been cultivated, seven of which occur with sufficient frequency to warrant their description in the text. It is shown that these microörganisms of the mouth differ in no essential feature from other germs in their relations to putrefaction and fermentation; but that, in addition, a number of them have the power of converting albuminoid substances into peptone. The lactic acid fermentation was found to be the most frequent, the acetic and butyric acid fermentations being thought by the author not to take place under ordinary circumstances in the mouth.

On page 91 begins an extended discussion of the causes of caries of the teeth. The various theories which have been advanced in explanation of this process are reviewed and discarded as untenable. This can hardly excite surprise when it is known that most of them antedate the present century. By way of example, we may cite the theory prevalent in the time of Scribonius (43 A. D.), that dental caries is due to the presence of worms in the teeth, a theory which, by the way, has survived to our day among the laity in China, and affords the Chinese dentist opportunity to exercise his propensity for juggling. He is said to conceal a number of small worms in a hollow tube, the end of which is introduced into the mouth of the patient. At the proper moment, when an opening into the aching tooth is supposed to have been made, the worms are skilfully ejected from the tube into the mouth of the sufferer, who immediately experiences much relief!

The recital of the author's own investigations into the causes of caries occupies nearly one hundred pages. It is impossible within the narrow compass of a review to give their details. Suffice it to say, that the theory which he educes at the end is based upon careful study of a very large number of cases, and is apparently most rational. He believes certain fermentations, chiefly the lactic acid, to be necessary precursors of any carious erosion of the teeth. These fermentations he has shown on a previous page to be of frequent occurrence in the mouth after the ingestion of carbohydrate foods. The acids thus generated form soluble compounds with the lime salts of the enamel, thus preparing the way for the lodgement of microörganisms on the roughened surface of the tooth. These continue the process. So far as the enamel is concerned, the process is essentially one of erosion of the surface, there being no penetration of the dense substance of the enamel by microörganisms, but in the case of the dentine it is different. Here the canaliculi are of sufficient calibre to admit of the entrance of microörganisms, and the process is carried on in the substance of the dentine as well as on its surface. Wherever the carious softening is progressing in the dentine, vast numbers of bacteria are found filling the canaliculi, many of which show the effects of their action in the irregularity and widening of their lumina, due, it is thought, to the digestion and absorption of the surrounding dentine. This process is not ascribed to any one species. Micrococci and bacilli of various species are found to take part in it, sometimes one predominating, sometimes another.

Artificial caries was produced by the author by allowing sound teeth to lie for a considerable time in mixtures of fermenting food and saliva. The caries thus produced presented all the appearances of that produced in the mouth. The caries occasionally found in the teeth of animals differs in no essential way from that in man, and is thought to be due to the same causes.

As predisposing conditions are mentioned softness of the enamel, deep fissures and cracks in it, irregularity of the teeth, retraction of the gums, etc.

Miller believes that his theory explains satisfactorily the low percentage of caries among races living upon a purely animal diet, since the fermentation thought by him so essential to the process, could not occur in the absence of carbohydrates in the food.

As prophylactic measures are recommended frequent cleansing of the teeth and mouth with antiseptic washes, among which Listerine is mentioned as agreeable and efficient.

The growing importance attributed to microörganisms in the etiology of disease makes the knowledge of their modes of entrance into the body of the greatest importance. The remaining third of the volume is devoted to the discussion of the various diseases of the mouth and general system dependent upon the introduction of pathogenic microorganisms from the mouth. Here, too, the original work of the author is very apparent. After description of nine pathogenic species previously studied, four new ones are added as the outcome of his own investigations.

Among the diseases of the mouth, to the knowledge of which the author has contributed, may be mentioned "pyorrhœa alveolaris," a chronic suppurative inflammation of the periosteum of the tooth, with more or less intense inflammation of the gum and necrosis of the alveolar process. This he concludes to be due to the action of no one specific germ, but to that of any one of a number, acting upon a system much reduced by other disease.

Special stress is laid upon the importance of the mouth as a point of entrance for microörganisms in diseases of the pharynx, larynx, lungs, and alimentary tract, and it is pointed out that in operations about the mouth we have the conditions most conducive to infection of the blood and through it of the body in general. Thorough antisepsis is, consequently, most essential.

In conclusion, short mention is made of the various yeasts and moulds which have been found in the mouth by various observers.

The volume is well printed and abundantly illustrated. A copious bibliography and index add very materially to its usefulness. Its perusal is recommended to all those interested in following the growth of our rapidly increasing fund of information upon the relations of microorganisms to disease.

J. S. E.

TRANSACTIONS OF THE AMERICAN ORTHOPEDIC ASSOCIATION. Vol. I. 8vo., pp. 303. Boston, 1889.

THIS is an exceedingly interesting volume, containing the transactions of the first and second annual meetings of the American Orthopedic Association. The first twenty pages only are devoted to the first meeting, which was held chiefly for the purpose of organization. The articles are all by men recognized as specialists in this important branch of surgery, and for scientific interest and practical value represent a collection of monographs on orthopedic subjects that is unique. They are all so uniformly excellent that it is difficult to select those which would be of most interest to the general readers.

Dr. V. P. Gibney contributes a "Report on the Treatment of Clubfoot by Means of the Thomas Wrench," in which he commends the simplicity of the instrument combined with tenotomy, and the subsequent use of ordinary shoes built higher on the outer side, and records twelve cases thus successfully treated.

Dr. E. H. Bradford also contributes a paper on the "Treatment of Clubfoot," to which is appended a table of one hundred and one cases, with a record of results and detailed notes of illustrated cases. The subject is handled in a masterful and impartial manner, is illustrated with numerous drawings, and there is a ring of sincerity that will please the general surgeon. In summarizing, he says: "In no branch of surgery can a cure be more confidently promised than in the treatment of clubfoot, and in few surgical undertakings do half measures occasion greater annoyance" (p. 112).